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Before the
FEDERAL COMMUNICATION COMMISSION

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In the matter of:

Interconnection Between Local
Exchange Carriers and
Commercial Mobile Radio
Service Providers

CC Docket No. 95-185

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COMMENTS OF
AIRTOUCH COMMUNICATIONS, INC.

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**COMMENTS OF
AIRTOUCH COMMUNICATIONS, INC.**

AirTouch Communications, Inc.¹ ("AirTouch") hereby submits its comments regarding the Commission's Notice of Proposed Rulemaking in the above-captioned proceeding.² In the Notice, the Commission examines how its interconnection policies should promote the continued development of commercial mobile radio services ("CMRS") in competition with local exchange carrier ("LEC") services. The Commission tentatively concludes that interim policies governing CMRS-LEC interconnection rates are necessary to foreclose LEC use of their substantial market power

¹ Directly and through various partnerships, AirTouch provides cellular services in the MSAs of Los Angeles, San Francisco, Detroit, San Diego, Atlanta, Cleveland, Cincinnati, Columbus, Sacramento, and Kansas City and other MSAs and RSAs within the same regional markets. In addition, AirTouch is in the process of completing a merger of its cellular interests with those of U S West NewVector Group, Inc. Finally, AirTouch is a partner in an "A" and "B" Block PCS licensee, PCS PrimeCo., L.P. AirTouch Paging is one of the largest paging companies in the United States.

² FCC 95-505 (released January 11, 1996) (the "NPRM"). In an Order and Supplemental Notice (FCC 96-61) dated February 16, 1996, the Commission extended the comment date in this proceeding to March 4, 1996 and specifically requested comments on the implications of the Telecommunications Act of 1996 on the Commission's proposals in the NPRM. AirTouch addresses this issue in Section VI.B. of these Comments.

over interconnection to inhibit competition from CMRS providers, and that bill and keep pricing of local switching and call termination is the preferred method to expeditiously implement such interim policies.³ The Commission seeks comment on this conclusion, as well as on (i) alternative interconnection options, (ii) the methods used to implement interconnection arrangements, (iii) its jurisdictional authority to adopt these proposals, (iv) compensation arrangements for the interconnection of interstate, interexchange traffic, and (v) categories of CMRS providers to which these proposals should apply.⁴

³ NPRM at para. 2-3. The Commission proposes to set rates for dedicated CMRS-LEC facilities on the basis of existing access charges.

⁴ Id., at para. 3.

Comments of
AirTouch Communications, Inc.
CC Docket No. 95-185
March 4, 1996

I. SUMMARY

AirTouch commends the Commission for its efforts in this proceeding to advance the opportunities for local loop competition by CMRS providers. Economists agree that long-run incremental costs are the appropriate basis for fair and efficient pricing. Moreover, telecommunications economists agree that the traffic-sensitive costs of interconnection are primarily driven by the need to meet peak traffic levels. It follows that, for off-peak periods, bill and keep is the optimal interconnection pricing policy, both in theory and in practice. There are some costs of serving peak traffic. However, properly measured, these costs are small. While, in theory, peak-load pricing would be appropriate if there were no transaction costs, there are severe practical difficulties with implementing such a policy. The costs of interconnection rate development, billing, collection, and audit would likely outweigh the efficiency benefits of exact cost-based pricing. Moreover, it will take a significant period of time to develop a cost-based, peak-load pricing system, and the delay associated with taking the time to develop such a system will only continue to advantage incumbent LECs, who will persist in charging inefficiently high rates to existing cellular carriers and forestall PCS and other wireless entry. Further, there is little potential harm from having bill and keep on an interim basis, while there is the potential for significant economic harm if interconnection rates are set too high during this critical period for CMRS industry development.

The Commission has the authority to preempt state regulation of LEC-CMRS interconnection and should do so to ensure that, unlike its past policy pronouncements in this area, this bill and keep policy is fully implemented. It is evident that the exercise of state authority has impeded implementation of the Commission's goals, and the continued exercise of such state authority will impair Congress' objective under the Budget Act of fostering the growth of mobile services that operate without regard to state lines and the Commission's objective of facilitating local loop competition. Additionally, Commission preemption is warranted under the Louisiana PSC doctrine both because the interstate and intrastate components of LEC-CMRS interconnection are inseverable and because the Budget Act makes clear that Congress intended for the Commission to exclusively occupy this field. The Telecommunications Act of 1996 does not limit the Commission's preemptive authority in this area. Rather, under the 1996 Act, the Commission is vested with additional authority over matters of solely intrastate interconnection.

II. GENERAL COMMENTS

Since 1986, the Commission, in progressively more explicit terms, has sought to ensure the right of cellular carriers to obtain interconnection arrangements from LECs under terms, conditions and pricing that are fair and reasonable. Its 1986 *Policy Statement*,⁵ which recognized the cellular carrier's status as a co-carrier and required LECs to offer reasonable interconnection arrangements, was followed the next year by the *Declaratory Ruling*,⁶ which first established a cellular carrier's right to mutual compensation. These policies were more recently codified for all CMRS providers.⁷

The goal of the Commission in these policy statements, to promote efficient forms and pricing of interconnection between LEC and CMRS networks, has generally gone unrealized, because LECs, due to their dominant market power, have been able to avoid implementing such policies in their interconnection arrangements with CMRS providers. AirTouch's experience over the past dozen years, which is described in Appendix A, is fairly typical. Specifically, the LECs with which AirTouch interconnects have refused to negotiate with cellular carriers on the basis of mutual compensation and have forced AirTouch to accept interconnection rates far above cost, often based on end-user (MTS) rates, rather than on a co-carrier model.

⁵ *The Need to Promote Competition and Efficient Use of Spectrum for Radio Common Carriers, Memorandum Opinion and Order*, 59 RR 2d 1275, 1283 (App. B) (1986).

⁶ *Declaratory Ruling*, 2 FCC Rcd 2910, 2915 (1987), aff'd on recon., 4 FCC Rcd 2369 (1989).

⁷ *CMRS Second Report*, 9 FCC Rcd 1411, 1497-98 (1994).

A. Description of AirTouch Arrangements

AirTouch typically utilizes the forms of interconnection arrangements described below:

Type 1 - Interconnection at an end office using a trunk group with features suitable to a PBX. This type of connection is used for 0+, 0-, 800, and 900 access. This type of connection was used for all interconnected calls, but the rates and terms are generally unfavorable, and it does not support advanced network features, such as SS7.

Type 2A - Interconnection at a tandem. This type of connection is used in both the mobile-to-PSTN and PSTN-to-mobile directions. This type of interconnection is used to deliver calls to any end office that subtends the tandem or, if the LEC's contract allows, to any end office belonging to that LEC in the LATA.

Type 2B - Interconnection at an end office, for delivery only to access lines connected to that end office switch. Although the usage rate is generally lower than Type 2A, this type of interconnection requires that we acquire dedicated facilities to each end office. Thus, Type 2B is generally only used when the volume of traffic to an end office justifies the cost of maintaining dedicated facilities to each end office.

Feature Group D - This is intrastate "switched access" from the switched access tariff. This is a tandem-based interconnection arrangement that can be used only to deliver calls to, and receive calls from, end offices that subtend a particular tandem. We currently used this type of service only in the mobile-to-PSTN direction.

The diagrams in Appendix B depict the network configurations between AirTouch and the LEC that support the above forms of interconnection.

B. Policy Considerations

Due to a number of reasons, including the high costs of interconnection and analog capacity limitations, cellular initially developed as a premium service, complementary to land-line service.⁸ However, with the additional spectrum allocated to

⁸ In adopting an interim bill and keep solution for LEC-CLEC interconnection, the Oregon Public Utility Commission recognized that "nonreciprocal compensation is one reason why cellular service is not

PCS and with the capacity increases afforded by digital technology, broadband CMRS is now poised to compete directly with the LECs. Yet, CMRS providers can succeed in local loop competition only if the Commission promptly requires LECs to negotiate arrangements for both interstate and intrastate interconnection that are cost-based, thus eliminating the opportunity for the LECs to “raise rivals’ costs” and weaken their wireless competitors.⁹

Increasingly, state commissions are recognizing that, as it pertains to entry by competitive local exchange carriers (CLECs or CLCs), a time-consuming analysis of the long-run incremental cost of LEC-CLEC interconnection would impair, if not preclude, the introduction of local loop competition by this nascent industry.¹⁰ These commissions have adopted interim bill & keep arrangements as the simplest, most equitable way to “kick-start” local loop competition from CLECs. As potential local loop competitors, broadband CMRS providers are entitled to the same treatment as CLECs. The Commission has recognized that “[s]hould telephone companies impose charges on a cellular carrier that differ from the charges they impose on each other, there may be discrimination under Section 202(a) of the Act.”¹¹ Interconnection policies that

perceived by the market as a substitute for local dialtone service.” *In the Matter of the Application of MFS Intelenet of Oregon, Inc., et al.*, Dockets CP 1, CP 14, & CP 15, Order No. 96-021, January 12, 1996.

⁹ See, e.g., T. Krattenmaker & S. Salop, *Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power Over Price*, Yale L.J., 234 (1986).

¹⁰ See e.g., Washington: *WUTC vs. US West Communications, Inc., et al.*, Docket Nos. UT-941464, UT-941465, UT-950146, & UT-950265, at 29-36; California: *Orders Instituting Rulemaking and Investigation on the Commission’s Own Motion for Local Exchange Service*, Docket Nos. R. 95-04-043 and I. 95-04-044, 163 PUR 4th 155 (Cal. P.U.C. 1995); Michigan: *In the Matter of the Application of City Signal, Inc.*, Case No. U-10647, 159 PUR 4th 532, 543-48, 577 (Mich. P.S.C. 1995) and Oregon.

¹¹ *Declaratory Ruling*, 2 FCC Rcd at 2916, para. 49. Furthermore, the Commission’s policy is to entitle cellular carriers to interconnection on the same basis as independent telephone companies. *Id.*, at 2915, para. 45.

disadvantage CMRS providers vis-a-vis CLECs would also be contrary to the Budget Act mandate that wireless networks be able to compete effectively with wireline networks.¹²

¹² *CMRS Second Report*, 9 FCC Rcd 1411, 1498 (1994).

III. BILL AND KEEP AS INTERIM SOLUTION

A. Analysis of Alternative Interim Pricing Solutions

1. Overview

This subsection presents an economic analysis of interconnection pricing. This analytical framework is then used to assess the Commission's tentative conclusions and alternative arrangements. The findings of this analysis can be summarized as follows:

- *Terminating Access.* In the NPRM, the Commission tentatively concludes that a bill and keep arrangement represents the best interim solution with respect to terminating access from LEC end offices to LEC end-user subscribers and from equivalent CMRS facilities to CMRS subscribers. The Commission's tentative conclusion is correct.
- *Dedicated transmission facilities between CMRS MTSOs and LEC networks.* The Commission tentatively concludes that CMRS providers should pay for these facilities at appropriate dedicated transport rates found in existing access tariffs. The Commission is correct that these facilities should be subject to non-traffic-sensitive capacity charges, but it has not chosen the correct pricing scheme. Dedicated transmission facilities generate benefits for subscribers to both LEC and CMRS networks, and thus LECs and CMRS providers should share equally the long-run incremental costs of dedicated transmission facilities.

- *Tandem switching and common transport between tandem switches and end offices.* The Commission does not reach any tentative conclusions, but rather seeks comment on whether tandem-switched elements of existing access charges should apply to CMRS traffic and, if so, whether to all minutes or solely to peak minutes. The correct charges for tandem-switched elements of access are less than those embodied in current access charges. Current charges include recovery of overheads that are not properly included in LEC-CMRS interconnection rates. The correct charges are sufficiently small, that the benefits of collecting them would be outweighed by the transactions costs of rate development, billing, collection, and auditing.

2. General Pricing Principles.

Economists widely recognize that the principle of cost causation is fundamental to the efficient pricing of goods and services. The principle of cost causation states that the users of a service should pay for only those costs that are caused, or triggered, by the provision of service to them. Cost causation is captured by the notion of incremental cost, the cost attributable to a specified increase in the level of a service over some baseline.

In most markets, efficiency is promoted by following two fundamental rules:

- Price *levels* should be set at the level of long-run incremental costs.¹³

¹³ In addition to providing correct market signals to purchasers of services, pricing at incremental cost is fair to other users. Under the generally accepted economic definition of cross subsidy, a service is not being subsidized if it covers its incremental cost. See Faulhaber, *Cross-subsidization: Pricing in Public Enterprises*, American Economic Review 65 (December 1975) 966-977. As long as an entity bears the incremental costs of the service being provided to it, that entity's consumption places no additional burdens on any other customer or service provider.

- The *structure* of prices should reflect the underlying pattern of cost causation.

These general principles are relevant to the pricing of LEC-CMRS interconnection as well, but there are four important considerations that must be taken into account in applying them:

- a. The provision of interconnection services may be subject to economies of scale and scope, which raises issues concerning the recovery of common costs and overheads.
- b. LEC-CMRS interconnection is an input to the production of other telecommunications services, and thus the effects on competition in the provision of those services must be taken into account.
- c. Parties at both ends of a call derive benefits from that call, so that it may be appropriate for customers and carriers at both ends of a given call to share the costs of that call.
- d. The costs of rate design, billing, collection, and audit may be large relative to the costs of the underlying transmission service, so that it may be most efficient to eliminate interconnection charges.

It is useful to consider each of these factors in turn.

a. Recovery of Common Costs, Rate Design and Overheads. LECs and CLECs must earn an adequate return on local infrastructure investment if they are to continue investing in these facilities. Local exchange facilities are used to produce a variety of services, including interexchange access, CMRS

interconnection, and local telephone service. The production of these services typically is subject to economies of scale and scope, so that pricing all services at long-run incremental cost would fail to cover the full costs of production. Consequently, some or all of the services must be priced above long-run incremental cost in order to cover common costs or overheads.

Properly spreading these overheads among services is both critical to maximizing the benefits society derives from telecommunications services, and extremely difficult. Because CMRS providers provide potential competition for wireline local exchange facilities, and because LEC interconnection is a vital input into the production of CMRS services, LECs can be expected to seek significant overhead loadings on interconnection services. It would be a serious mistake for the Commission to allow this to happen.

By raising prices above incremental costs, overhead loadings would suppress both interconnection and—as these input prices were passed through to retail rates—the consumption of CMRS below efficient levels. Moreover, setting interconnection rates above cost will reduce the profitability of offering CMRS and thus suppress the overall incentives to invest in CMRS facilities. Consequently, the CMRS investment needed to bring local loop competition could be reduced or delayed, thus diminishing the efficiency benefits that competition would otherwise bring to consumers.¹⁴ Further, the over-pricing

¹⁴ It is worth noting that CMRS providers' incentives to invest in facilities to provide local loop competition may be too low from a social perspective. The argument is as follows. Competition will reduce prices, which benefits consumers. These consumer benefits are a social good, but are not positive investment incentives because the benefits accrue to consumers, not producers. Lowering the price of interconnection encourages competitive entry and there is little danger of low interconnection prices encouraging socially excessive entry. Laffont and Tirole, "Access Pricing and Competition," *European Economic Review* 38 (1994) 1673-1710 discuss the fact it may be desirable to lower interconnection prices to compensate for insufficient entry incentives.

of LEC interconnection facilities may create incentives for inefficient bypass in those limited cases where CMRS providers can substitute their facilities for those of the LECs with whom they are interconnecting.

There is no need for policy makers to trigger these adverse effects. The charges for local service, vertical calling features, intra-LATA toll calling, interexchange access, and other services all contribute toward the recovery of the LECs' embedded costs. There is no need to burden CMRS providers with overhead loadings pending the overall reform of separations, interstate access, universal service, and the pricing of intrastate services.¹⁵ LECs should not be allowed to over-recover costs in the interim.

Similarly, it would be unwise public policy to raise subsidy revenues through LEC-CMRS provider interconnection charges. LECs already collect sufficient funds to support current universal service policies through existing subsidy mechanisms. More important, the Commission should not raise subsidy revenues from a service that potentially competes directly with the subsidized service. Raising subsidies from a potential competitor, such as a CMRS provider, is self-defeating. The resulting handicap may deter the entry of a potential rival even when that firm has lower costs than the incumbent LEC. If it were not forced to bear the subsidy burden, such a competitor might enter and thus reduce or eliminate the need for subsidies in the first place.

¹⁵ What is needed is overall reform of the system by which universal service is supported. As called for in the Telecommunications Act of 1996, competitively neutral funding mechanisms must be put in place. The protection of competitive neutrality must extend to the market for local exchange services. While the overall reform process will take time, in the interim the Commission should not take actions—such as levying subsidy burdens on CMRS providers—that will compound the problems of the current system. At the time overall reform is undertaken, CMRS providers will be bearing their fair share of the overall burden.

Interestingly, in other proceedings before the Commission, LECs have argued that they should have the flexibility to price as low as incremental costs in response to competitive offerings. They have argued that price floors above long-run incremental costs will create price umbrellas for competitors. But the same logic implies that charging wireless carriers interconnection rates above long-run incremental cost will create a price umbrella for wireline carriers competing with those wireless carriers. If it is appropriate for LECs to price end-user services at incremental cost to meet competition, it is appropriate for them to price interconnection services at incremental cost to promote efficient competition.

In summary, pending comprehensive reform of interexchange access charges and the universal service system, only those costs that are directly triggered by LEC-CMRS interconnection should be considered in the development of LEC-CMRS interconnection charges.

b. Effects on Retail Service Pricing. LEC-CMRS interconnection is an input to the production of retail communications services. This fact has several important implications which follow from the role that retail prices play in guiding efficient consumption decisions and the relationship between input prices and retail prices.

Through the financial incentives that they create, service prices guide end users': (i) choice of if and how long to make a call; (ii) choice of when to call; and (iii) choice among competing service providers.

Prices set at incremental service costs provide the proper incentives with respect to if and how long to call. Pricing at this level ensures that end users will make calls if and only if the benefits to them exceed the costs of providing the service. Note, however, that the critical prices are *retail* service prices. For the near future, end-user services will be provided under conditions of imperfect competition. Consequently, service providers generally will charge a markup over their costs. Economists analyzing this situation have noted that to get more efficient retail prices (*i.e.*, closer to incremental costs) it may be optimal to lower the price of inputs such as interconnection.¹⁶ This analysis demonstrates an important fundamental point. Low interconnection rates provide incentives for carriers to stimulate use of the public switched telephone network, which is efficient as long as retail rates are not below cost. Overly high interconnection prices, however, may stifle the development of the CMRS industry and wireless local loop competition. In short, the risk to the public interest from the overpricing of LEC-CMRS interconnection is much greater than the risk from “under pricing.”

Turning to the second dimension of consumption efficiency, the choice of when to call is affected by time-of-day variations in prices. In the absence of any transaction costs, prices at each instant would reflect the level of congestion on the network at that time. Such pricing is, of course, impractical, and an actual pricing scheme must balance administrative and transactions costs against any benefits of fine tuning prices. It is also important to note that peak-load pricing for interconnection will generate no consumption

¹⁶ See Laffont and Tirole, “Creating Competition Through Interconnection: Theory and Practice,” manuscript (November 1994) Section 9.1 and Arnbak, Mitchell, Neu, Neumann, and Vogelsang, “Network Interconnection in the Domain of ONP” Final Report (November 1994), study conducted for DG XIII of the European Commission, Section 3.5.

efficiency benefits if this pricing structure is not reflected in *retail* rates. For example, if the Commission were to adopt a complicated switch-dependent peak-load pricing scheme, it is unlikely that retail rates would mirror it. In this case, there might be little or no benefit from the peak-load pricing of interconnection.

The third type of consumption efficiency, the choice among competing carriers, is promoted by having firms with similar underlying costs charge similar prices. It is important to recognize that it is the pattern of prices across carriers, rather than relationship of any one price to the underlying cost of service, that matters here. For example, the fact that most consumers purchase local exchange service for a flat monthly charge may make it efficient for carriers to price competing services the same way, even if they, like incumbent LECs, actually incur some traffic-sensitive costs in providing these services. Relative to the first two types of consumption choice, demand may be particularly responsive to price differences across carriers; firm-specific elasticity's generally are much larger than market elasticity's. Hence, it is important that distortions in competition between wireline and wireless service providers be minimized to the extent practicable.

Summarizing this analysis, because of the nature of retail pricing, there is little threat to efficiency from the "under pricing" of LEC-CMRS interconnection and there are likely to be few efficiency benefits associated with complex peak-load pricing schemes for interconnection.

c. Both Parties Benefit from a Call. When one party calls another, both of them typically derive benefits from the call. Indeed, for some people and

businesses, the ability to receive calls is more valuable than the ability to initiate them. Both 800 numbers and one-way paging are examples of services where the called party pays for the service, rather than the calling party.

When a LEC network and CMRS network interconnect, customers on both wireline and wireless networks benefit.¹⁷ Because of the differences in network sizes, each individual customer on the CMRS network generally benefits by a greater amount than does a customer on the LEC network. But, while the per-customer network effects are larger on the CMRS network, a much greater number of customers on the LEC network benefit. *A priori*, it is impossible to say which set of subscribers derives the greater aggregate benefit from interconnection.

The level and structure of LEC-CMRS interconnection charges should reflect the fact that subscribers to both networks benefit and that these benefits are not properly measured by the direction of the traffic flows between the two networks. In particular, the importance of call direction should not be overstated.¹⁸

Some might argue that it is possible to determine which network benefits more from interconnection. CMRS providers typically are the party seeking interconnection. This might be taken as an indicator that most of the benefits accrue to the CMRS service provider and its subscribers, and thus that they should pay the costs of interconnection. This inference is unwarranted. The LECs' reluctance to provide interconnection is more

¹⁷ The positive consumption benefits that a consumer derives when more people can be reached through the network to which he or she is connected is known as a *network effect*.

¹⁸ Interestingly, while LECs may argue that the direction of traffic flow is relevant to billing, interexchange carriers pay LECs for both terminating *and* originating access. Payments do not follow the traffic flow. See Section VIII B below.

accurately interpreted as a sign of their market or bargaining power. Absent interconnection, a LEC remains a viable business entity. Most CMRS providers would find it impossible to survive absent connection to wireline networks. LECs can be expected to exploit this fact in two ways. One, they can be expected to exercise their bargaining power to extract a high price for interconnection. Second, they can be expected to attempt to limit interconnection in order to block entry and/or weaken existing competitors. As the business model for CMRS moves toward increasingly direct competition with LECs, this latter effect can be expected to worsen. While the desire to exercise and protect market power makes interconnection relatively less attractive to LECs, the true social benefits of interconnection accrue to both wireline and wireless networks.

In summary, because the parties at both ends of a call typically derive benefits from that call, traffic direction alone is not a proper basis for cost recovery.

d. The Costs of Rate Design Likely Outweigh any Efficiency Benefits of Cost-Based Pricing. The costs of rate design billing, collection, and audit needed to implement a peak-load pricing system for interconnection would likely be significant. Such a pricing scheme would require extensive modification of the current billing system, CABS, to ensure accuracy and accountability. The CABS system was designed for billing IXC's. It is not designed for CMRS traffic, would be costly and expensive to redesign, and the LECs have indicated they are unwilling to make these changes.¹⁹ The present system does not provide any traffic breakdown to the CMRS

¹⁹ Indeed, even the minimal detail provided by CABS may not be cost-effective in comparison to the true cost of interconnection. During interconnection negotiations with BellSouth in Georgia in 1994, one cellular carrier requested CABS - like billing reports. BellSouth refused to provide such detail, stating that

provider being billed for interconnection and thus makes it impossible to check the accuracy of the billing. LECs typically do not distinguish between peak and off-peak traffic for CMRS providers.

The costs of modifying and operating the billing system to support peak-load pricing have to be assessed against the potential benefits of peak-load pricing. As discussed above, there may be few efficiency gains from complex peak-load pricing schemes. Moreover, there is little potential harm to efficiency from pricing interconnection too low. Further, as discussed at greater length below, the incremental costs of interconnection are essentially zero during off-peak periods and near zero during peak periods. In terms of fairness, two factors come into play. First, both wireline and wireless carriers and their customers benefit from interconnection. Second, over the full day, the average incremental costs of interconnecting to a LEC network are quite close to zero.²⁰ And, once one takes into account the fact that the peaks of CMRS and other traffic using the LEC network do not coincide, the average incremental costs of LEC-CMRS interconnection are even lower.

In light of the fact that there is little danger that pricing interconnection too low will result in inefficiently high consumption of these services, it is more efficient to eliminate interconnection charges rather than trigger the rate development, billing, collection, and audit costs needed to support them. Such an approach will also eliminate the need to

its total wireless interconnection revenues did not justify the cost of the programming that would be required to provide wireless carriers as much information as CABS provides.

²⁰ Gerald Brock estimates that the average cost is approximately 0.2¢ per minute. See Gerald W. Brock, *The Economics of Interconnection: Incremental Cost of Local Usage* (April 1995).

incur the direct costs of developing rates and the indirect costs associated with the delay in implementing efficiently low interconnection charges . The appropriate policy is to adopt a bill and keep system rather than attempt to charge for any traffic-sensitive costs of LEC-CMRS interconnection.

B. Bill and Keep is the Appropriate Policy for Shared Facilities

The two fundamental principles of cost-causative pricing, combined with the four considerations discussed above, provide guidance for the pricing of shared facilities. By the first principle, only incremental costs should be considered in determining LEC-CMRS interconnection rates. And, by the second principle, traffic-sensitive charges should be used to recover only traffic-sensitive costs.

Shared facilities include the local loop and local switching, and in some cases interoffice trunking and tandem switching. Absent universal service concerns, local loop costs should be recovered through flat charges levied on the end user because these costs are triggered by the end user's decision to connect to the public switched telephone network, not by calling volume. For policy reasons, local telephone rates do not fully recover these costs from the end user. But the current subsidies from interexchange access charges, vertical calling features, and other services already meet existing subsidy needs. LEC-CMRS interconnection should not contribute toward the cost of local loop pending overall reform of universal service and interexchange access charges.

Next, consider the incremental switching costs of LEC-CMRS interconnection. First note that line card and other line-side local switch costs are not incremental costs of LEC-CMRS interconnection. Line card expenses are set-up costs associated with

connection of a particular subscriber to the PSTN. In terms of shared facilities, the costs of LEC-CMRS interconnection arise from congestion, or capacity, costs. These costs arise because high traffic volumes lead to slower call processing. This fact means that off-peak switching and interoffice transport (on shared facilities) costs are essentially zero.

There are positive peak-period costs, captured by either the costs of service degradation associated with processing delays or the expense of upgrading facilities to have sufficient call handling capacity to meet peak needs. But it is important not to overstate these costs. For example, switch processor upgrades are driven by more than peak-period traffic volume. Other drivers include technological change that lead to new processors with lower operating and maintenance costs, as well as the ability to offer new services. These offsetting benefits need to be netted out before ascribing all of the costs of a processor upgrade to increases in peak-period traffic.

Summarizing this analysis, the incremental costs of LEC-CMRS interconnection associated with shared facilities are essentially zero off-peak and low on-peak. Moreover, prior to overall reform of the pricing of local exchange facilities and universal service support, neither overheads nor subsidy burdens should be levied on a service, such as broadband CMRS, that may provide local loop competition. Thus, an interim policy of bill and keep both minimizes administrative costs and sends proper signals to economic decision makers.²¹

²¹ Some may argue that the use of bill and keep will give CMRS providers excessive incentives to rely on LEC facilities. This concern is misplaced. The facilities for which this concern arises are those for which: (1) the costs are distance sensitive, and (2) the CMRS provider has the ability to substitute its facilities for those of the LEC with whom it is interconnecting. Facilities satisfying these two conditions are likely to be dedicated facilities. For the reasons stated in the next section of these comments, dedicated facilities' costs

C. The Costs of Dedicated Facilities Should Be Shared Equally Between the Interconnecting Carriers

The two fundamental principles and four considerations discussed above also provide guidance for the pricing of facilities dedicated to LEC-CMRS interconnection. The costs of these facilities tend to vary with the capacity of the facility, not the actual calling volume. Hence, by the second fundamental principle of cost-causative pricing, these non-traffic-sensitive costs of dedicated facilities should not be recovered through traffic-sensitive charges. Rather, these costs should be recovered through flat charges. In calculating these costs and the resulting charges, it is again important to exclude overheads in order to give CMRS providers the opportunity to compete against wireline local loop.

In addition to determining that the relevant costs are incremental costs, public policy should specify how the burdens of those costs are borne. Facilities dedicated to interconnecting LEC and CMRS provider networks are properly viewed as shared facilities, where the sharing is between the LEC and the CMRS provider. Rather than requiring the CMRS provider to pay the full cost of these facilities, the two networks should share the costs, because the benefits of interconnection accrue to subscribers of both the LEC network and the CMRS network.²² This is true even if all of the traffic

should be shared equally between the LEC and CMRS provider. These parties then have incentives to choose interconnection arrangements that minimize the costs that they jointly bear.

²² The NXX Establishment Charge is an example where LECs essentially share interconnection costs with each other but not with CMRS providers. When a new NXX, or central office code, is assigned to a carrier's switch, all switches (of all carriers) that directly interchange traffic with the switch to which the new NXX is assigned must be programmed to recognize and properly route calls to the new NXX. When a new NXX is activated in a wireline carrier's switch, each LEC bears the cost of programming its own switches, presumably in recognition that each LEC benefits from the traffic that will be generated from such additional numbers. When a new NXX is activated in a wireless switch, however, interconnecting LECs (who often are the local numbering plan administrators who assign new NXX codes) typically impose a charge on the CMRS carrier to